CLAIMS

1. A non-contact position sensor comprising:

a slider having a magnet;

a stator consisting of a magnetic body having an area allowing the slider to move while keeping a predetermined clearance;

a magnetically-sensitive sensor provided in the stator to detect a position of the slider corresponding to a percentage of the magnet entering the area; and

a magnetic flux leakproof member for preventing magnetic flux, which is generated in a part of the magnet that does not enter the area, from leaking out to the stator.

2. A non-contact position sensor comprising:

a slider having a magnet having its front and back faces whose polarities are different from each other;

a stator consisting of a magnetic body having a pair of opposed walls forming an area allowing the slider to move while keeping a predetermined clearance, the opposed walls corresponding to the front and back faces of the magnet;

a magnetically-sensitive sensor provided in the stator to detect a position of the slider corresponding to a percentage of the magnet entering the area; and

a magnetic flux leakproof member for preventing magnetic flux, which is generated in a part of the magnet that does not enter the area, from leaking out to the stator.

3. The non-contact position sensor of claim 1 or 2, wherein

the magnetic flux leakproof member is formed by a magnetic body allowing a passage of the magnetic flux generated in a part of the magnet

that does not enter the area.

4. A non-contact position sensor comprising:

a slider having a magnet having its front and back faces whose polarities are different from each other;

a main stator consisting of a magnetic body having a pair of opposed walls forming an area allowing the slider to move while keeping a predetermined clearance, the opposed walls corresponding to the front and back faces of the magnet, and a gap continuing into the opposed walls;

a magnetically-sensitive sensor arranged in the gap to detect a position of the slider corresponding to a percentage of the magnet entering the area; and

an assist stator for preventing magnetic flux, which is generated in a part of the magnet that does not enter the area, from leaking out to the main stator.

5. The non-contact position sensor of claim 4, wherein

the assist stator has a pair of opposed walls corresponding to front and back faces of the part of the magnet that does not enter the area.

6. The non-contact position sensor of claim 4, wherein

the assist stator has a pair of opposed walls corresponding to front and back faces of the part of the magnet that does not enter the area and a gap continuing into the opposed walls.

7. A non-contact position sensor comprising:

a slider having a magnet having its front and back faces whose polarities are different from each other;

a main stator consisting of a magnetic body having a pair of opposed walls forming a first area allowing the slider to move while keeping a

predetermined clearance, the opposed walls corresponding to the front and back faces of the magnet, and a gap continuing into the opposed walls;

an assist stator arranged at a gap extending along a moving direction of the slider from the main stator, the assist stator consisting of a magnetic body having a pair of opposed walls forming a second area allowing the slider to move while keeping a predetermined clearance; and

a magnetically-sensitive sensor arranged in the gap of the main stator to detect a position of the slider corresponding to a percentage of the magnet entering the first area of the main stator.

8. The non-contact position sensor of claim 7, wherein

the opposed walls of the assist stator are connected with each other integrally.

9. The non-contact position sensor of claim 7, wherein

the assist stator is partitioned through the gap continuing into the opposed walls.

10. A non-contact position sensor comprising:

a slider having a magnet having its front and back faces whose polarities are different from each other;

a main stator consisting of a magnetic body having a pair of opposed walls forming a first area allowing the slider to move while keeping a predetermined clearance, the opposed walls corresponding to the front and back faces of the magnet, and a pair of transverse walls formed to extend from the opposed walls and arranged close to each other through a uniform gap along a moving direction of the slider;

an assist stator arranged at a gap extending along the moving direction of the slider from the main stator, the assist stator consisting of a magnetic body having a pair of opposed walls forming a second area

allowing the slider to move while keeping a predetermined clearance, the opposed walls corresponding to the front and back faces of the magnet; and

a magnetically-sensitive sensor arranged in an optional position in the gap of the main stator to detect a position of the slider corresponding to a percentage of the magnet entering the first area of the main stator.

11. A non-contact position sensor comprising:

a slider having a magnet having its front and back faces whose polarities are different from each other;

a main stator consisting of a magnetic body having a pair of opposed walls forming a first area allowing the slider to move while keeping a predetermined clearance, the opposed walls corresponding to the front and back faces of the magnet, and a transverse arm formed to extend from one of the opposed walls and arranged close to the other of the opposed walls through a uniform gap along a moving direction of the slider;

an assist stator arranged at a gap extending along the moving direction of the slider from the main stator, the assist stator consisting of a magnetic body having a pair of opposed walls forming a second area allowing the slider to move while keeping a predetermined clearance, the opposed walls corresponding to the front and back faces of the magnet; and

a magnetically-sensitive sensor arranged in an optional position in the gap of the main stator to detect a position of the slider corresponding to a percentage of the magnet entering the first area of the main stator.

12. A non-contact position sensor comprising:

a slider having a magnet having its front and back faces whose polarities are different from each other;

a main stator consisting of a magnetic body having a pair of opposed walls forming a first area allowing the slider to move while keeping a predetermined clearance, the opposed walls corresponding to the front and

back faces of the magnet, a first arm formed to extend from one of the opposed walls and arranged close to the other of the opposed walls through a uniform gap along a moving direction of the slider and a second arm formed to extend from the other of the opposed walls and arranged close to the one of the opposed walls through a uniform gap along a moving direction of the slider;

an assist stator arranged at a gap extending along the moving direction of the slider from the main stator, the assist stator consisting of a magnetic body having a pair of opposed walls forming a second area allowing the slider to move while keeping a predetermined clearance, the opposed walls corresponding to the front and back faces of the magnet; and

a magnetically-sensitive sensor arranged in an optional position in the gap between the first arm and the other of the opposed walls to detect a position of the slider corresponding to a percentage of the magnet entering the first area of the main stator.

13. The non-contact position sensor of claim 10 or 11, wherein

the magnetically-sensitive sensor is arranged at a midpoint between both ends of the gap of the main stator.

14. The non-contact position sensor of claim 12, wherein

the magnetically-sensitive sensor is arranged in the gap of the first arm and in a position close to a midpoint between both ends of the main stator.

15. The non-contact position sensor of any one of claims 10, 11 and 12, wherein

the assist stator is an integral-type element where the opposed walls are connected with each other through a transverse wall integrally.

16. The non-contact position sensor of any one of claims 10, 11 and 12, wherein

the assist stator is a separation-type element where transverse walls extending from the opposed walls are separated from each other through a uniform gap throughout both ends of each of the transverse wall along a moving direction of the slider.

17. A non-contact position sensor comprising:

a slider consisting of a pair of magnets whose side edges along a moving direction of the slider are joined to each other and each of which has front and back faces whose polarities are different from each other and an armature provided on one side face of the pair of magnets;

a main stator consisting of a magnetic body arranged in a position opposing the other side face of the pair of magnets;

a magnetically-sensitive sensor provided in the main stator to detect a position of the slider corresponding to a percentage of the magnets entering an area where the slider opposes the main stator; and

an assist stator consisting of a magnetic body for preventing magnetic flux, which is generated in parts of the magnets that do not enter the area, from leaking out to the main stator.

18. The non-contact position sensor of claim 17, wherein

magnetic flux generated in parts of the magnets that do not enter the main stator forms a loop in the assist stator.